



28 November 2009

Morning Sound Industries Co., Ltd.  
B2/8F, No. 2, Fusing 4rd Rd., Cianjhen Dist,  
Kaohsiung, Taiwan

Dear Doris Lin:

Enclosed you will find your file copy of a Part 15 report (FCC ID: XY6CLS7XX).

For your reference, TCB will normally take another 5 days for reviewing the report.  
Approval will then be granted when no query is sorted.

Please contact me if you have any questions regarding the enclosed material.

Sincerely,

A handwritten signature in black ink, appearing to read "Shawn Xing".

Shawn Xing  
Assistant Manager

Enclosure

**Intertek Testing Services Shenzhen Ltd. Kejiyuan Branch**

6F, D Block, Huahan Building, Langshan Road, Nanshan District, Shenzhen, P. R. China  
Tel: (86 755) 8601 6288 Fax: (86 755) 8601 6751 Website: [www.china.intertek-etslsemko.com](http://www.china.intertek-etslsemko.com)



**Morning Sound Industries Co., Ltd.**

Application  
For  
Certification  
**(FCC ID: XY6CLS7XX)**

Superheterodyne Receiver

*Billy Li*

SZ090100001-2

Billy Li

28 November 2009

- The test results reported in this test report shall refer only to the sample actually tested and shall not refer or be deemed to refer to bulk from which such a sample may be said to have been obtained.
- This report is for the exclusive use of Intertek's Client and is provided pursuant to the agreement between Intertek and its Client. Intertek's responsibility and liability are limited to the terms and conditions of the agreement. Intertek assumes no liability to any party, other than to the Client in accordance with the agreement, for any loss, expense or damage occasioned by the use of this report. Only the Client is authorized to copy or distribute this report. Any use of the Intertek name or one of its marks for the sale or advertisement of the tested material, product or service must first be approved in writing by Intertek. The observations and test results referenced from this report are relevant only to the sample tested. This report by itself does not imply that the material, product, or service is or has ever been under an Intertek certification program.
- For Terms And Conditions of the services, it can be provided upon request.
- The evaluation data of the report will be kept for 3 years from the date of issuance.

TRF no.: FCC 15B\_RX-Sha  
FCC ID: XY6CLS7XX

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# INTERTEK TESTING SERVICES

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## LIST OF EXHIBITS

### *INTRODUCTION*

<i>EXHIBIT 1:</i>	General Description
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<i>EXHIBIT 3:</i>	Emission Results
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<i>EXHIBIT 8:</i>	Miscellaneous Information
<i>EXHIBIT 9 :</i>	Test Equipment List

# INTERTEK TESTING SERVICES

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## MEASUREMENT / TECHNICAL REPORT

**Morning Sound Industries Co., Ltd.**  
**MODEL: CLS725**  
**Additional Model: CLS721, CLS729**  
**FCC ID: XY6CLS7XX**

**28 November 2009**

This report concerns (check one):      Original Grant  Class II Change

Equipment Type: Superheterodyne Receiver

Deferred grant requested per 47 CFR 0.457(d)(1)(ii)?      Yes       No

If yes, defer until: \_\_\_\_\_  
date

Company Name agrees to notify the Commission by: \_\_\_\_\_  
date

of the intended date of announcement of the product so that the grant can be issued on  
that date.

Transition Rules Request per 15.37?      Yes       No

If no, assumed Part 15, Subpart C for intentional radiator – the new 47 CFR [10-01-08  
Edition] provision.

Report prepared by:



Shawn Xing  
Intertek Testing Services Shenzhen Ltd.  
Kejiyuan Branch  
6F, Block D, Huahan Building, Langshan Road,  
Nanshan District, Shenzhen, P. R. China  
Phone: (86 755) 8601 6288  
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# INTERTEK TESTING SERVICES

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## INTERTEK TESTING SERVICES

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### List of attached file

Exhibit Type	File Description	Filename
Test Report	Test Report	report.pdf
Test Setup Photo	Radiated Emission	radiated photos.pdf
Test Setup Photo	Conducted Emission	conducted photos.pdf
External Photo	External Photo	external photos.pdf
Internal Photo	Internal Photo	internal photos.pdf
Schematics	Circuit Diagram	circuit.pdf
Operation Description	Technical Description	descri.pdf
Block Diagram	Block Diagram	block.pdf
ID Label / Location	Label Artwork and Location	label.pdf
User Manual	User Manual	manual.pdf
Cover Letter	Letter of agency	agency.pdf

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**INTERTEK TESTING SERVICES**

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**EXHIBIT 1**

**GENERAL DESCRIPTION**

# INTERTEK TESTING SERVICES

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## 1.0 General Description

### 1.1 Product Description

The Equipment Under Test (EUT) is a Superheterodyne receiver which can operate at 72.1-72.9 MHz. The EUT is powered by internal 3.7 V rechargeable battery or by an Input AC 120V, 60Hz, Output DC 12V, 300mA adapter.

Antenna Type: Integral

For electronic filing, the brief circuit description is saved with filename: descri.pdf.

### 1.2 Related Submittal(s) Grants

This is an application for Certification of a receiver. The transmitter, associated with this receiver, has FCC ID: XY6CLS7XXT has been filed at the same time.

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### 1.3 Test Methodology

Both AC mains line-conducted and radiated emission measurements were performed according to the procedures in ANSI C63.4 (2003). Radiated emission measurement was performed in semi-anechoic chamber and conducted emission measurement was performed in shield room. For radiated emission measurement, preliminary scans were performed in the semi-anechoic chamber only to determine the worst case modes. All radiated tests were performed at an antenna to EUT distance of 3 meters, unless stated otherwise in the "**Justification Section**" of this Application.

### 1.4 Test Facility

The Semi-Anechoic chamber and shield room used to collect the radiated data and conducted data is **Intertek Testing Services Shenzhen Ltd. Kejiyuan Branch** and located at 6F, Block D, Huahan Building, Langshan Road, Nanshan District, Shenzhen, P. R. China. This test facility and site measurement data have been fully placed on file with the FCC.

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**EXHIBIT 2**

**SYSTEM TEST CONFIGURATION**

## INTERTEK TESTING SERVICES

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### 2.0 System Test Configuration

#### 2.1 Justification

The system was configured for testing in a typical fashion (as a customer would normally use it), and in the confines as outlined in ANSI C63.4 (2003).

The EUT is powered by Input AC 120V, 60Hz, Output DC 12V, 300mA adapter and internal 3.7 V rechargeable battery during test.

For maximizing emissions, the EUT was rotated through 360°, the antenna height was varied from 1 meter to 4 meters above the ground plane, and the antenna polarization was changed. The step by step procedure for maximizing emissions led to the data reported in Exhibit 3.0.

The rear of unit shall be flushed with the rear of the table when powered by Input AC 120V, 60Hz, Output DC 12V, 300mA adapter and placed in the centre of the turntable when powered by internal rechargeable battery.

The equipment under test (EUT) was configured for testing in a typical fashion (as a customer would normally use it). The EUT was placed on turntable, which enabled the engineer to maximize emissions through its placement in the three orthogonal axes.

The frequency range from 30MHz to 1GHz was searched for spurious emissions from the device. Only those emissions reported were detected. All other emissions were at least 20 dB below the applicable limits.

#### 2.2 EUT Exercising Software

There was no special software to exercise the device.

#### 2.3 Special Accessories

There are no special accessories necessary for compliance of this product.

## INTERTEK TESTING SERVICES

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### 2.4 Equipment Modification

Any modifications installed previous to testing by Morning Sound Industries Co., Ltd. will be incorporated in each production model sold / leased in the United States.

No modifications were installed by Intertek Testing Services Shenzhen Ltd Kejiyuan Branch.

### 2.5 Measurement Uncertainty

When determining the test conclusion, the Measurement Uncertainty of test has been considered.

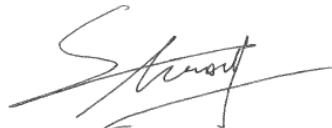
### 2.6 Support Equipment List and Description

This product was tested in a standalone configuration.

All the items listed under section 2.0 of this report are

*Confirmed by:*

*Shawn Xing  
Assistant Manager  
Intertek Testing Services Shenzhen Ltd Kejiyuan Branch.  
Agent for Morning Sound Industries Co., Ltd.*



*Signature*

28 November 2009 *Date*

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**EXHIBIT 3**

**EMISSION RESULTS**

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### 3.0 Emission Results

Data is included worst case configuration (the configuration which resulted in the highest emission levels). A sample calculation, configuration photographs and data tables of the emissions are included.

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### 3.1 Field Strength Calculation

The field strength is calculated by adding the Antenna Factor and Cable Factor, and subtracting the Amplifier Gain (if any) from the measured reading. The basic equation with a sample calculation is as follows:

$$FS = RA + AF + CF - AG$$

where

FS = Field Strength in dB $\mu$ V/m

RA = Receiver Amplitude (including preamplifier) in dB $\mu$ V

CF = Cable Attenuation Factor in dB

AF = Antenna Factor in dB

AG = Amplifier Gain in dB

In the following table(s), the reading shown on the data table reflects the preamplifier gain. An example for the calculations in the following table is as follows:

$$FS = RR + LF$$

where

FS = Field Strength in dB $\mu$ V/m

RR = RA - AG in dB $\mu$ V

LF = CF + AF in dB

Assume a receiver reading of 52.0 dB $\mu$ V is obtained. The antenna factor of 7.4 dB and cable factor of 1.6 dB are added. The amplifier gain of 29 dB is subtracted, giving a field strength of 32 dB $\mu$ V/m. This value in dB $\mu$ V/m was converted to its corresponding level in  $\mu$ V/m.

$$RA = 52.0 \text{ dB}\mu\text{V}/\text{m}$$

$$AF = 7.4 \text{ dB}$$

$$RR = 23.0 \text{ dB}\mu\text{V}$$

$$CF = 1.6 \text{ dB}$$

$$LF = 9.0 \text{ dB}$$

$$AG = 29.0 \text{ dB}$$

$$FS = RR + LF$$

$$FS = 23 + 9 = 32 \text{ dB}\mu\text{V}/\text{m}$$

$$\text{Level in } \mu\text{V}/\text{m} = \text{Common Antilogarithm } [(32 \text{ dB}\mu\text{V}/\text{m})/20] = 39.8 \mu\text{V}/\text{m}$$

## **INTERTEK TESTING SERVICES**

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### **3.2 Radiated Emission Configuration Photograph**

**Worst Case Radiated Emission  
At  
175.147MHz**

For electronic filing, the worst case radiated emission configuration photograph is saved with filename: radiated photos.pdf.

## INTERTEK TESTING SERVICES

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### 3.3 Radiated Emission Data

The data on the following page lists the significant emission frequencies, the limit and the margin of compliance. Numbers with a minus sign are below the limit.

Judgment: Passed by 11.9dB margin

### **TEST PERSONNEL:**



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*Signature*

Billy Li, Compliance Engineer

*Typed / Printed Name*

28 November 2009

*Date*

## INTERTEK TESTING SERVICES

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Company: Morning Sound Industries Co., Ltd.

Date of Test: 28 November 2009

Model: CLS725

Operating Mode: Receive, Powered by AC adapter

Channel Frequency: 72.5MHz

**Table 1**

### FCC Class B Radiated Emissions

Polarization	Frequency (MHz)	Reading (dB $\mu$ V)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m (dB $\mu$ V/m)	Limit at 3m (dB $\mu$ V/m)	Margin (dB)
H	31.455	24.7	20.0	18.4	23.1	40.0	-16.9
H	33.392	24.4	20.0	17.3	21.7	40.0	-18.3
H	36.308	24.3	20.0	15.6	19.9	40.0	-20.1
H	131.365	27.3	20.0	8.9	16.2	43.5	-27.3
H	175.147	40.7	20.0	10.9	31.6	43.5	-11.9
H	692.510	25.0	20.0	24.3	29.3	46.0	-16.7

NOTES: 1. Peak Detector Data unless otherwise stated.

2. All measurements were made at 3 meters. Harmonic emissions not detected at the 3-meter distances were measured at 0.3-meter and an inverse proportional extrapolation was performed to compare the signal level to the 3-meter limit. No other harmonic emissions than those reported were detected at a test distance of 0.3-meter.
3. Negative value in the margin column shows emission below limit.
4. Horn antenna used for the emission over 1000MHz.
5. All emissions below 1000MHz are below the QP limit.

Test Engineer: Billy Li

## **INTERTEK TESTING SERVICES**

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### **3.4 Conducted Emission Configuration Photograph**

Worst Case Line-Conducted Configuration  
at

0.430 MHz

For electronic filing, the worst case conducted emission configuration photograph is saved with filename: conducted photos.pdf.

## INTERTEK TESTING SERVICES

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### 3.5 Conducted Emission Data

Judgement: Passed by 29.7 dB margin

#### ***TEST PERSONNEL:***



*Signature*

Billy Li, Compliance Engineer

*Typed/Printed Name*

28 November 2009

*Date*

# INTERTEK TESTING SERVICES

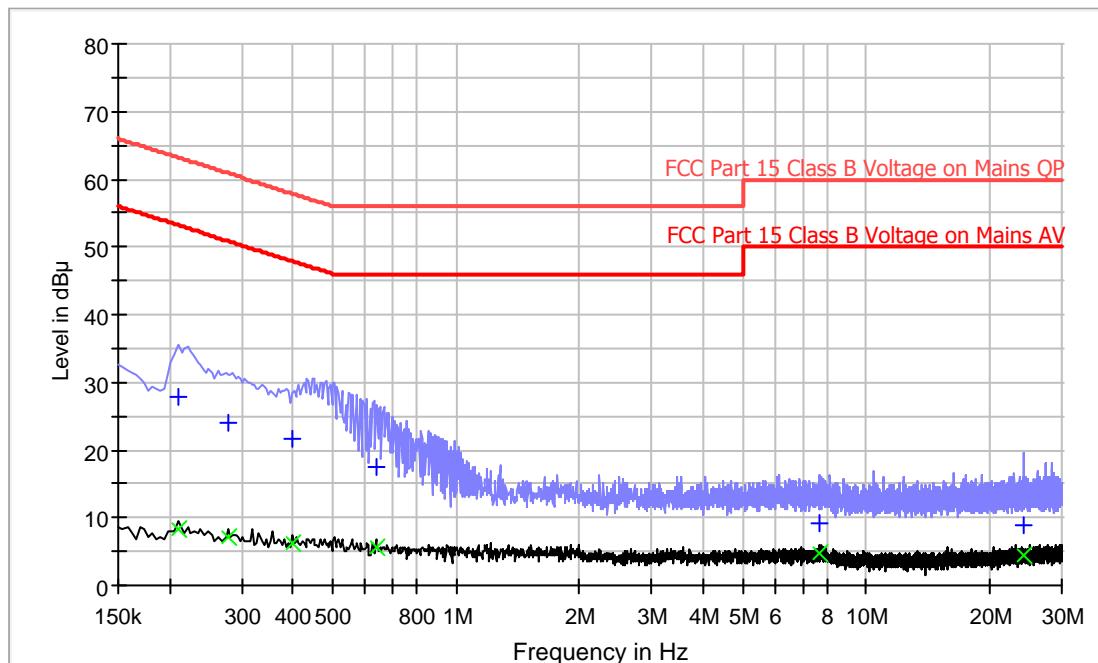
Company: Morning Sound Industries Co., Ltd.

Date of Test: 28 November 2009

Model: CLS725

Worst Case Operating Mode: Receive

Channel Frequency: 72.5 MHz



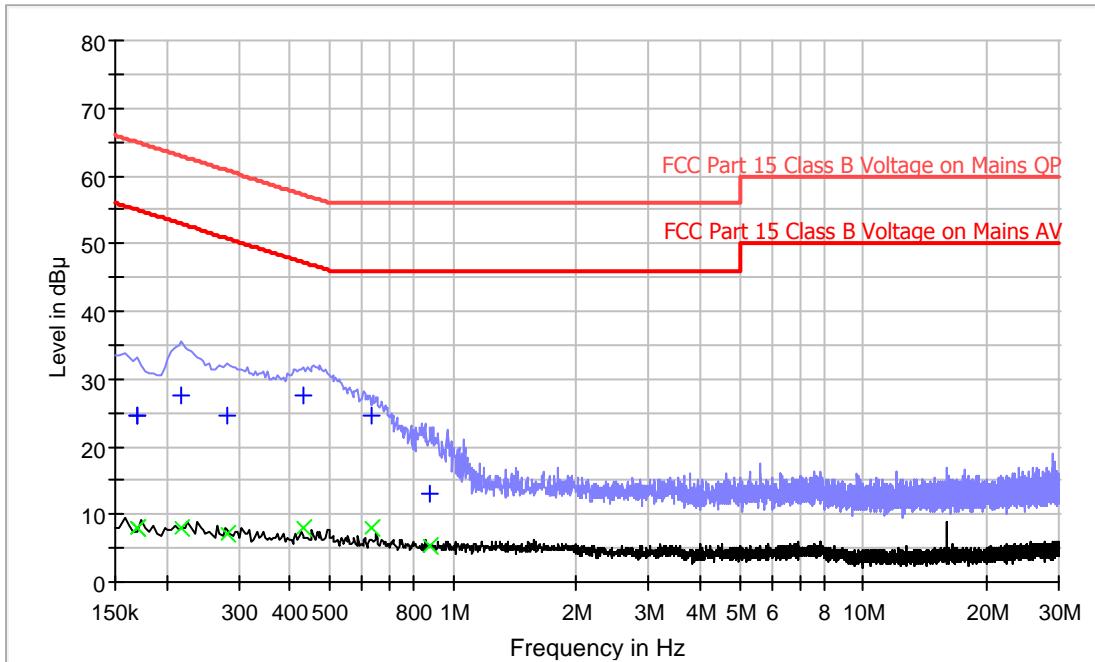
## Result Table -QP

Frequency (MHz)	QuasiPeak (dB µ V)	Line	Corr. (dB)	Margin (dB)	Limit (dB µ V)
0.210000	27.9	L1	9.6	35.3	63.2
0.278000	23.9	L1	9.6	37.0	60.9
0.398000	21.6	L1	9.6	36.3	57.9
0.638000	17.5	L1	9.7	38.5	56.0
7.718000	9.2	L1	9.8	50.8	60.0
24.250000	8.8	L1	10.1	51.2	60.0

## Result Table -AV

Frequency (MHz)	Average (dB µ V)	Line	Corr. (dB)	Margin (dB)	Limit (dB µ V)
0.210000	8.2	L1	9.6	45.0	53.2
0.278000	7.0	L1	9.6	43.9	50.9
0.398000	6.3	L1	9.6	41.6	47.9
0.638000	5.7	L1	9.7	40.3	46.0
7.718000	4.8	L1	9.8	45.2	50.0
24.250000	4.4	L1	10.1	45.6	50.0

# INTERTEK TESTING SERVICES



## Result Table -QP

Frequency (MHz)	QuasiPeak (dB $\mu$ V)	Line	Corr. (dB)	Margin (dB)	Limit (dB $\mu$ V)
0.170000	24.7	N	9.6	40.3	65.0
0.170000	24.7	N	9.6	40.3	65.0
0.218000	27.5	N	9.6	35.4	62.9
0.282000	24.6	N	9.6	36.2	60.8
0.430000	27.6	N	9.6	29.7	57.3
0.634000	24.7	N	9.6	31.3	56.0
0.882000	13.0	N	9.6	43.0	56.0

## Result Table -AV

Frequency (MHz)	Average (dB $\mu$ V)	Line	Corr. (dB)	Margin (dB)	Limit (dB $\mu$ V)
0.170000	8.0	N	9.6	47.0	55.0
0.170000	8.0	N	9.6	47.0	55.0
0.218000	8.0	N	9.6	44.9	52.9
0.282000	7.1	N	9.6	43.7	50.8
0.430000	7.9	N	9.6	39.4	47.3
0.634000	8.0	N	9.6	38.0	46.0
0.882000	5.4	N	9.6	40.6	46.0

Test Engineer: Billy Li

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**INTERTEK TESTING SERVICES**

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**EXHIBIT 4**

**EQUIPMENT PHOTOGRAPHS**

## INTERTEK TESTING SERVICES

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### 4.0 Equipment Photographs

For electronic filing, photographs of the tested EUT are saved with filename: external photos.pdf and internal photos.pdf.

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**EXHIBIT 5**

**PRODUCT LABELLING**

## INTERTEK TESTING SERVICES

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### 5.0 Product Labelling

For electronics filing, the FCC ID label artwork and the label location are saved with filename: label.pdf.

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**EXHIBIT 6**

**TECHNICAL SPECIFICATIONS**

## INTERTEK TESTING SERVICES

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### 6.0 Technical Specifications

For electronic filing, the block diagram of the tested EUT is saved with filename: block.pdf.

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**INTERTEK TESTING SERVICES**

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**EXHIBIT 7**

**INSTRUCTION MANUAL**

## INTERTEK TESTING SERVICES

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### 7.0 Instruction Manual

For electronic filing, a preliminary copy of the Instruction Manual is saved with filename: manual.pdf.

This manual will be provided to the end-user with each unit sold / leased in the United States.

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**EXHIBIT 8**

**MISCELLANEOUS INFORMATION**

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### 8.0 **Miscellaneous Information**

This miscellaneous information includes the test procedure and calculation of factors such as pulse desensitization.

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### 8.1 Discussion of Pulse Desensitization

The determination of pulse desensitivity was made in accordance with Hewlett Packard Application Note 150-2, *Spectrum Analysis ... Pulsed RF*.

This device is a superheterodyne receiver. The stabilized signals are continuous, and no desensitization of the measurement equipment occurs.

## INTERTEK TESTING SERVICES

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### 8.2 Emissions Test Procedures

The following is a description of the test procedure used by Intertek Testing Services Shenzhen Ltd. Kejiyuan Branch in the measurements of superheterodyne receivers operating under the Part 15, Subpart B rules.

The test set-up and procedures described below are designed to meet the requirements of ANSI C63.4 - 2003. The local oscillator of the superheterodyne receiver is stabilized prior to measurement by generating a typical or an unmodulated CW Signal at the operating frequency of the receiver. The signal is usually generated as CW with a R&S SML03 signal generator and a short whip antenna and is at a level of several hundred to several thousand mV/m. If a modulated signal is used, it will be noted.

The equipment under test (EUT) is placed on a wooden turntable which is four feet in diameter and approximately one meter in height above the groundplane. During the radiated emissions test, the turntable is rotated and any cables leaving the EUT are manipulated to find the configuration resulting in maximum emissions. The EUT is adjusted through all three orthogonal axis to obtain maximum emission levels. The antenna height and polarization are also varied during the testing to search for maximum signal levels. The height of the antenna is varied from one to four meters.

Detector function for radiated emissions is in peak mode. Average readings, when required, are taken by measuring the duty cycle of the equipment under test and subtracting the corresponding amount in dB from the measured peak readings.

The frequency range scanned is from 30MHz to 1000MHz. For line conducted emissions, the range scanned is 150 kHz to 30 MHz.

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### 8.2 Emissions Test Procedures (cont'd)

The EUT is warmed up for 15 minutes prior to the test.

AC power to the unit is varied from 85% to 115% nominal and variation in the fundamental emission field strength is recorded. If battery powered, a new, fully charged battery is used.

Conducted measurements were made as described in ANSI C63.4 - 2003.

The IF bandwidth used for measurement of radiated signal strength was 100 kHz or greater when frequency is below 1000 MHz. Where pulsed transmissions of short enough pulse duration warrant, a greater bandwidth is selected according to the recommendations of Hewlett Packard Application Note 150-2. A discussion of whether pulse desensitivity is applicable to this unit is included in this report (See Exhibit 8.1). Above 1000 MHz, a resolution bandwidth of 1 MHz is used.

Measurements are normally conducted at a measurement distance of three meters. All measurements are extrapolated to three meters using inverse scaling, unless otherwise reported. Measurements taken at a closer distance are so marked.

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**INTERTEK TESTING SERVICES**

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**EXHIBIT 9**

**TEST EQUIPMENT LIST**

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### 9.0 Test Equipment List

Equipment No.	Equipment	Manufacturer	Model No.	Serial No.	Cal. Date	Due Date
SZ061-03	BiConiLog Antenna	ETS	3142C	00066460	25-Nov-09	25-May-11
SZ185-01	EMI Receiver	R&S	ESCI	100547	18-May-09	18-May-10
SZ188-01	Anechoic Chamber	ETS	RFD-F/A-100	4102	31-Oct-09	31-Oct-10
SZ062-02	RF Cable	RADIALL	RG 213U	--	26-Oct-09	26-Apr-10
SZ062-06	RF Cable	RADIALL	0.04-26.5GHz	--	17-Aug-09	17-Aug-10
SZ187-01	LISN	R & S	ENV216	100072	23-Nov-09	23-Nov-10
SZ187-02	LISN	R & S	ENV216	100073	23-Nov-09	23-Nov-10
SZ185-02	EMI Test Receiver	R&S	ESCI	100692	23-Nov-09	23-Nov-10
SZ188-03	Shielding Room	ETS	RFD-100	4100	15-Sep-07	15-Sep-10
SZ180-01	Signal Generator	R&S	SML03	103286	16-Feb-09	16-Feb-10